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PROBLEMS.

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202. By P. M. Mc Kay. —If $r \div d$ reduces to a repetend, prove that $s \div d = R \div 9$, where s is the sum of the remainders occurring in the division, and R is the sum of the digits of the repetend.

203. By L. Regan, Boonsboro, Iowa.—Two lines Am and An make a given angle at A, and D is a point given in postion between Am and An. Draw a straight line BC through D so that $BD \times DC =$ a given quantity, B and C being points in the lines Am and An, respectively.

204. (Selected) By Prof. M. L. Comstock, Galesburg, Ill.—Find the locus of the intersection of normals to the ellipse which are perpendicular to each other.

205. By Prof. W. P. Casey, San Francisco, Cal. —The distance between the centres of two circles is given, and the radius of one, fiind the radius of the other, when the length of the endless band which passes around them is given.

206. By R. J. Adcock, Monmouth, Ill.— Determine the position of a plane from the measured rectangular coordinates of n points, each measure being equally good.

207. By E. B. Seitz, Greenville, Ohio.— If M, N, P, Q are four random points in the surface of a circle, find the chance that E, the intersection of the straight lines through M, N and P, Q, lies between M, N and between P, Q.

208. By Prof. J. H. Kershner.—When the tangent, QT, to a fixed parabola is of constant length, and one extremity, T, moves along the axis to the origin, what is the curve described by the other extremity, Q?

209. By S., New York City. — C is the center of a circle of known radius, DB is a diameter produced and AB is an inflexible rod, of known length. One end, A, moves continually in the circumference of the circle while the other end, B, slides to and fro upon DB.

Required the equation of the curve described by any point P, in the rod.

210. By Artemas Martin, M. A., Erie, Pa. — Find such integral values of x, y and z as will satisfy the conditions

$$x^2+axy+y^2 = \square,$$
$$x^2+bxz+z^2 = \square,$$
$$y^2+cyz+z^2 = \square.$$